

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

1-2. (Canceled)

3. (Currently amended): A method of manufacturing a rare earth permanent magnet comprising the steps of: ~~forming a cylindrical or disc-like rare earth magnet with a hole forming an inner surface, wherein the magnet has a surface to volume ratio of 2 mm⁺ or more and a volume of 100 mm³ or less, the forming step being accomplished by applying mechanical processing to a magnet block material, thereby damaging the surface of the magnet and causing a magnetic characteristic (BH)_{max} of the magnet to deteriorate,~~

inserting an electrode wire into [[the]] a hole of [[the]] a cylindrical or disc shaped magnet,

supporting the magnet on the electrode wire in a depressurized tank, extending placing the electrode wire between oppositely-disposed targets in the tank, transforming an R metal (R denotes at least one kind of rare earth elements selected from the group consisting of Y, Nd, Dy, Pr, Ho and Tb) or an alloy containing an R metal into fine particles by a sputtering method,

rotating the magnet with the electrode wire as a rotation shaft, blowing

Amendment under 37 CFR §1.111
Application No. 10/551,432
Attorney Docket No. 053087

allowing the fine particles to fly and deposit onto the whole or part of the surface of the magnet ~~and causing them to be deposited there~~,

allowing the fine particles to diffuse and permeate from the surface of the magnet to the inside of the magnet to at least a depth corresponding to a radius of a grain exposed on the outermost surface of the magnet, ~~and thereby improving the quality of the damaged magnet surface a portion so that the magnetic characteristic $(BH)_{max}$ is recovered to 280 kJ/m³ or more.~~

4. (Currently amended): A method of manufacturing a rare earth permanent magnet as set forth in claim 3, wherein the step of ~~blowing~~ allowing the fine particles ~~and causing them to be deposited on the magnet~~ to fly and deposit is carried out at the same time as the step of allowing the fine particles to diffuse and permeate the magnet.

5-7. (Canceled)

8. (Currently amended): A method of manufacturing rare earth permanent magnet as set forth in claim 3 ~~characterized in that, wherein~~ the oppositely-disposed targets are ring-like targets disposed concentrically about the center axis of the cylindrical or disc-like magnet.

9. (Currently amended): A method of manufacturing a rare earth permanent magnet comprising the steps of: ~~forming a cylindrical or disc-like rare earth magnet with a hole forming~~

Amendment under 37 CFR §1.111
Application No. 10/551,432
Attorney Docket No. 053087

~~an inner surface or a cylindrical or prismatic rare earth magnet with no hole, wherein the magnet has a surface to volume ratio of 2 mm² or more and a volume of 100 mm³ or less, the forming step being accomplished by applying mechanical processing to a magnet block material, thereby damaging the surface of the magnet and causing a magnetic characteristic (BH)_{max} of the magnet to deteriorate, packing~~

loading [[the]] a magnet in a wire basket to be freely tumbled, supporting placing the wire basket between oppositely-disposed targets in a depressurized tank, vaporizing an R metal (R denotes at least one kind of rare earth elements selected from the group consisting of Y, Nd, Dy, Pr, Ho and Tb) or an alloy containing an R metal in the depressurized tank by physical means, blowing

allowing the R-metal vapour to fly and deposit onto the whole or part of the surface of the magnet and causing deposition of the vapor there,

allowing the R metal vapor to diffuse and permeate from the surface of the magnet to the inside of the magnet to at least a depth corresponding to a radius of a grain exposed on the outermost surface of the magnet, ~~and thereby improving the quality of the damaged magnet surface portion so that the magnetic characteristic (BH)_{max} is recovered to 280 kJ/m³ or more.~~

10. (Currently amended): A method of manufacturing rare earth permanent magnet as set forth in claim 9, wherein the step of blowing allowing the R-metal vapour to fly and deposit the

Amendment under 37 CFR §1.111
Application No. 10/551,432
Attorney Docket No. 053087

fine particles and causing them to be deposited on the magnet is carried out at the same time as the step of allowing the fine particles to diffuse and permeate the magnet.

11. (Previously presented): A method of manufacturing a rare earth permanent magnet as set forth in claim 3, wherein the step of allowing the vapor to diffuse and permeate the magnet is effected while a concentration of impurity gases from the air contained in the ambient atmosphere is reduced to 50 ppm or less.

12. (Previously presented): A method of manufacturing a rare earth permanent magnet as set forth in claim 3, wherein the magnet is an Nd-Fe-B system or Pr-Fe-B system magnet and the R metal is Dy or Tb.

13. (Previously presented): A method of manufacturing a rare earth permanent magnet as set forth in claim 9, wherein the step of allowing the vapor to diffuse and permeate the magnet is effected while a concentration of impurity gases from the air contained in the ambient atmosphere is reduced to 50 ppm or less.

14. (Previously presented): A method of manufacturing a rare earth permanent magnet as set forth in claim 9, wherein the magnet is an Nd-Fe-B system or Pr-Fe-B system magnet and the R metal is Dy or Tb.

Amendment under 37 CFR §1.111

Application No. 10/551,432

Attorney Docket No. 053087

15. (New): A method of manufacturing a rare earth permanent magnet as set forth in claim 9, further comprising a step of forming the rare earth magnet into a cylindrical or disc shape with a hole forming an inner surface or a cylindrical, or into prismatic shape with no hole, wherein the magnet has a surface to volume ratio of 2 mm^{-1} or more and a volume of 100 mm^3 or less, the forming step being accomplished by applying mechanical processing to a magnet block material, thereby damaging the surface of the magnet.

16. (New) A method of manufacturing a rare earth permanent magnet as set forth in claim 3, further comprising a step of forming a cylindrical or disc-like rare earth magnet with a hole forming an inner surface, wherein the magnet has a surface to volume ratio of 2 mm^{-1} or more and a volume of 100 mm^3 or less, the forming step being accomplished by applying mechanical processing to a magnet block material, thereby damaging the surface of the magnet.